AMENDMENTS

In the Claims:

Please amend claims 18, 20, 26, 27, 30, 32-34, 36-41, 43-45.

18. (Amended) The method of claim 14, wherein the airflow through the bypass is determined by a flow measuring device located in the bypass flow path.

20. (Amended) The method of claim 14, further comprising a power turbine downstream of the catalyst and a generator connected to the power turbine wherein the measured load is the output of the generator.

26. (Amended) A method of controlling a catalytic combustion process consisting of a combustion zone through which air is flowed wherein the process includes, a fuel injection means to provide fuel to a catalyst and one or more catalyst sections wherein:

a portion of the fuel is combusted within the catalyst and the remaining fuel exits the outlet face of the catalyst and combusts in a homogeneous combustion reaction in the space downstream of said catalyst outlet face,

the bypass system operation is based on fundamental engine performance measurements such as exhaust gas temperature, ambient temperature, compressor discharge pressure, compressor discharge temperature; and

the bypass valve closed loop control is based on the valve's feedback position.

27. (Amended) A method of controlling a catalytic combustion process consisting of a combustion zone through which air is flowed wherein the process includes, a fuel injection means to provide fuel to a catalyst and one or more catalyst sections wherein:

a portion of the fuel is combusted within the catalyst and the remaining fuel exits the outlet face of the catalyst and combusts in a homogeneous combustion reaction in the space downstream of said catalyst outlet face,

a bleed system operation is based on exhaust gas temperature to maximize the low emissions operating range of said catalyst; and

the bleed valve closed loop control is based on exhaust gas temperature.

30. (Amended) The method of claim 29 or 33 wherein in the at least one thermodynamic combustion system parameter is selected from the group consisting of the exhaust gas temperature, the difference between the exhaust gas temperature and a calculated exhaust gas temperature at full load, the turbine inlet temperature; the combustor outlet temperature, the combustor inlet temperature, turbine load, the catalyst inlet temperature, catalyst temperature, the catalyst outlet temperature, the adiabatic combustion temperature, the preburner outlet temperature, the preburner inlet temperature, the preburner inlet pressure, the preburner outlet pressure, the catalyst inlet pressure, the catalyst outlet pressure, the combustor inlet pressure, the combustor outlet pressure, fuel flow to a primary zone preburner, fuel flow to a secondary zone preburner, fuel flow to the combustor, fuel flow to the catalyst, airflow to a primary zone preburner, airflow to a secondary zone preburner, and airflow to the combustor.

32. (Amended) The method of claim 31 wherein the feedback is closed loop.

33. (Amended) The method of claim 30 further including the steps of:

providing a flow path containing a valve that bleeds combustor inlet air flow;

selecting a second predetermined schedule that relates the at least one thermodynamic combustion system parameter to a predetermined airflow that bleeds combustor inlet air flow; and

controlling the airflow that bleeds combustor inlet air flow by selecting the predetermined airflow that bleeds combustor inlet air flow from the second predetermined schedule based on the at least one measured thermodynamic combustion system parameter.

34. (Amended) The method of claim 33 further including the steps of:

providing feedback of the at least one thermodynamic combustion system parameter; and

adjusting the airflow that bleeds combustor inlet air flow based on the feedback.

36. (Amended) The method of claim 30 or 33 wherein the step of controlling the airflow that bypasses the catalyst includes the step of preselecting a thermodynamic combustion system parameter setpoint.

37. (Amended) The method of claim 36 wherein the combustion system parameter setpoint is selected to reduce combustor emissions.

38. (Amended) The method of claim 36 wherein the step of controlling the airflow that bleeds combustor inlet air flow includes adjusting the airflow that bleeds combustor inlet air flow to maintain the setpoint.

39. (Amended) The method of claim 36 wherein the step of controlling the airflow that bleeds combustor inlet air flow includes the step of preselecting a second thermodynamic combustion system parameter setpoint.

40. (Amended) The method of claim 39 wherein the step of controlling the airflow that bleeds combustor inlet air flow includes the step of adjusting the airflow that bleeds combustor inlet air flow to maintain the second setpoint.

41. (Amended) The method of claim 39 wherein the second thermodynamic combustion system parameter setpoint is selected to reduce combustor emissions.

43. (Amended) The method of claim 42 wherein in the at least one thermodynamic combustion system parameter is selected from the group consisting of the exhaust gas temperature, the difference between the exhaust gas temperature and a calculated exhaust gas temperature at full load, the turbine inlet temperature; the combustor outlet temperature, the combustor inlet temperature, turbine load, the catalyst inlet temperature, catalyst temperature, the catalyst outlet temperature, the adiabatic combustion temperature, the preburner outlet temperature, the preburner inlet temperature, the preburner inlet pressure, the preburner outlet pressure, the catalyst inlet pressure, the catalyst outlet pressure, the combustor inlet pressure, the combustor outlet pressure, fuel flow to a primary zone preburner, fuel flow to a secondary zone preburner, fuel flow to the combustor, fuel flow to the catalyst, airflow to a primary zone preburner, airflow to a secondary zone preburner, and airflow to the combustor.

44. (Amended) The method of claim 42 further including the steps of:

providing feedback of the at least one thermodynamic combustion system parameter; and

adjusting the airflow that bleeds combustor inlet air flow.

45. (Amended) The method of claim 44 wherein the feedback is closed loop.